

REMARKS

This communication is responsive to Office Action of May 19, 2004 in which the following objections were raised: [1] claim 3 was objected to due to informalities; [2-3] Claims 11-12, 23-24 were rejected under 35 U.S.C. 112 as reciting a limitation for which there was insufficient antecedent basis; [4-5] Claims 1-3, 7-15 and 19-24 were rejected under 35 U.S.C. 103(a) as being unpatentable over Cioffi (US Patent 5,887,032); [6] Claims 25-28 were allowed; [7] Claims 4-6 and 16-18 were objected to but indicated to be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Applicant has Amended Independent Claims 1, 4-6, 16-18 and Dependent Claims 2-3, 7-12, 14-15, 20-24 and canceled Claims 13 and 19. Applicant greatly appreciates the Examiner's allowance of Claims 25-28 as well as indications of the allowability of Claims 4-6 and 16-18.

1 CLAIM 3 OBJECTED TO DUE TO INFORMALITIES

Claim 3 was objected to because of the informality involving the word derive which the Examiner suggested changing to 'derives'.

Applicant has amended Claim 3 in conformance with the Examiner's suggestion and therefore requests that the objection be withdrawn.

2-3 CLAIMS 11-12, 23-24 REJECTED UNDER 35 U.S.C. 112

Claims 11-12, 23-24 were rejected as reciting the limitation 'said at least one X-DSL protocol' for which there was insufficient antecedent basis.

Applicant has amended Claims 11-12 to depend directly from Claim 10 in which the antecedent basis for the at least one X-DSL protocol is found. Applicant has also amended Claims 23-24 to depend directly from Claim 22 in which the antecedent basis for the at least

one X-DSL protocol is found. Applicant therefore respectfully requests that the rejection be withdrawn.

4-5 CLAIMS 1-3, 7-15 and 19-24 REJECTED UNDER 35 U.S.C. 103(a):

Claims 1-3, 7-15 and 19-24 were rejected under 35 U.S.C. 103(a) as being unpatentable over Cioffi (US Patent 5,887,032).

Claim 1:

The Examiner has characterized the Cioffi reference as disclosing an interference canceller which adaptively derives FEXT and NEXT. (Office Action of 5/19/04 at page 4). The Applicant respectfully rejects the FEXT portion of the Examiner's characterization of the Cioffi reference.

The Cioffi reference discloses a NEXT interference canceller for use in echo cancelled or ping pong based data transmission schemes where transmission and reception is carried out in the same frequency range at different times. *"FIG. 2illustrates a situation in which overlapping downstream and upstream transmissions occur in a SDMT transmission system having ...transmission frames... with different levels of service.The overlap portion...is the portion in which the transmission frames...have overlapping transmissions of opposite directions."* (Cioffi at col. 8, lines 27-33 and 50-53 and FIGS. 2, 7 and 8). Where different levels of service are not present the interference canceller is of no advantage. *"...[A] SDMT transmission system will have all lines ...synchronize their upstream and downstream transmissions....so..NEXT interference ...is avoided because all transmissions on lines associated with a common node are always in the same direction. However, when the SDMT transmission system has lines ...providing different levels of service...the NEXT interference problem returns because transmissions ...can again overlap....The invention provides a method and apparatus for canceling NEXT interference that is particularly well suited for the SDMT transmission system offering different levels of service."* (Cioffi at col. 7, lines 16-29). *"It should be noted that the interference cancellers ...need only be operational during the periods in which transmission and reception overlap for the associated pairs of lines."* (Cioffi at col. 12, lines 64-67). The Cioffi specification never specifically mentions the word

FEXT. In the discussion accompanying FIG. 5 the Cioffi reference mentions in passing interference from a remote transmitter in a local receiver, a.k.a. FEXT. *“Although theoretically crosstalk interference is induced from the line 502[remote transmitter] to the line 500 [local receiver] as well, such crosstalk is not problematic as signals being transmitted are normally significantly more powerful than received signals. Hence [NEXT] crosstalk from [local] lines transmitting to [local] lines concurrently receiving are ... the focus of the remaining discussion.”* (Cioffi at col. 11, lines 3-9)(Inserts added by Applicant). Furthermore, in the following paragraph of the Cioffi reference the only interferors modeled in the associated equations are one or more local transmitters the transmissions of which corrupt the receptions of a local receiver. (Cioffi at col. 11, lines 26-64, FIGS. 5AB and 6). The Applicant respectfully suggests that the Cioffi reference therefore specifically teaches away from the importance of FEXT and by implication the need for any solutions for interference cancellation with respect to same.

The Applicant has amended Claim 1 to specifically include the FEXT limitation as follows.

“...an interference canceller coupled with the local set of modems and configured to coordinate during a training phase, transmissions of selected interfering data channels of at least the remote set of modems with reception of at least one selected victim data channel at a corresponding one of the local set of modems and to adaptively derive at least far end crosstalk (FEXT) interference cancellation coefficients between the at least one victim data channel and the selected interfering data channels and to apply the interference cancellation coefficients during a runtime phase to communications received by the corresponding one of the local set of modems to substantially cancel at least FEXT interference therein.”(Applicant’s amended Claim 1, Emphasis added).

Applicant therefore respectfully suggests for the reasons discussed above that amended Claim 1 has been placed in a condition for allowance.

Claims 2-3, 7-12 have been amended to depend directly or indirectly from objected to Claim 4. Claim 4 was indicated by the Examiner to contain allowable subject matter if amended to include the limitations of the base and any intervening claims from which it depended. Applicant has accordingly amended Claim 4 into Independent form with the required additional limitations. Dependent Claims 2-3, 7-12 are therefore believed to have been placed in a condition for allowance by reason of the allowability of Claim 4 from which they now depend, and for other reasons of independent significance.

Claims 13, 19 Applicant has cancelled Claims 13 and 19.

Claims 14-15, 20-24 have been amended to depend directly or indirectly from objected to Claim 16. Claim 16 was indicated by the Examiner to contain allowable subject matter if amended to include the limitations of the base and any intervening claims from which it depended. Applicant has accordingly amended Claim 16 into Independent form with the required additional limitations. Dependent Claims 14-15, 20-24 are therefore believed to have been placed in a condition for allowance by reason of the allowability of Claim 16 from which they now depend, and for other reasons of independent significance.

6 CLAIMS 25-28 ALLOWED

Claims 25-28 were allowed.

Applicant greatly appreciates the Examiner's allowance of Claims 25-28.

7 CLAIMS 4-6 and 16-18 ALLOWABLE

Claims 4-6 and 16-18 were objected to but indicated to be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

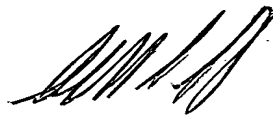
Applicant greatly appreciates the Examiner's indication of allowable subject matter in the objected to Claims. Applicant has amended each of Claims 4-6 and 16-18 into Independent form incorporating in each case the required limitations.

CONCLUSION

In view of the above remarks, and the amendments to the Claims, Applicant respectfully submits that all remaining Claims 1-12, 14-18, 20-28 have been placed in a condition for allowance, and requests that they be allowed. Early notice to this effect is solicited.

The Commissioner is authorized to charge any additional fees which may be required, including petition fees and extension of time fees, to Deposit Account No. 50-1338 (Docket No. VELCP001X1C).

Respectfully submitted,
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